Racial and Ethnic Preferences in College Admissions*

THOMAS J. KANE**

College admissions committees, not markets, ration access to many of the most selective U.S. colleges. As the labor market payoff to a college education has risen and competition for admission to elite universities has become more keen, racial preference in college admissions has become increasingly controversial, particularly at public institutions. In the spring of 1996 the Fifth Circuit Court of Appeals dramatically narrowed the latitude to use race in determining admissions to colleges within its jurisdiction, and the Supreme Court subsequently refused to review this decision. The following fall, voters in California approved a proposal to end the use of racial and ethnic preferences in admissions to state institutions. A number of other states are also reconsidering the role of race and ethnicity in admissions and financial aid. Some will wait for the Supreme Court to clarify the legal issues at stake, but some may not.[1] Because colleges shroud their admissions procedures in mystery, the public knows little about the extent to which racial preference is practiced. Even less is known about the impact of such preferences on the later careers of black and white youth. This Article explores these questions using data collected from the high school class of 1982.

Part I uses the High School and Beyond (HSB) survey to analyze the importance of race to college admission decisions in the early 1980s. It shows that racial preference is confined to "elite" colleges and universities, namely, the most academically selective fifth of all four-year institutions, where scores

---

* Reprinted with permission of the Brookings Institution Press from THE BLACK-WHITE TEST SCORE GAP (Christopher Jencks & Meredith Phillips eds., 1998). Requests for further permission to reprint or copy this Article should be directed to the Brookings Institution Press.

** I began work on this paper while a visiting fellow at the Brown Center for Education Policy at the Brookings Institution. I thank William Dickens, George Akerlof, Christopher Jencks, Chris Avery, William Bowen, Helen Ladd, Meredith Phillips, Charles Schultze, Doug Staiger, and David Wise for many helpful comments and discussions. Seminar participants at the University of Chicago, Harvard University, and the National Bureau of Economic Research offered a number of helpful suggestions; in particular, Charles Clotfelter, Ron Ehrenberg, Robert Hauser, Robert Meyer, Derek Neal, and Michael Rothschild. Tony Shen and Susan Dynarski provided excellent research assistance in the early stages of this research. Any errors are my sole responsibility.

[1] The attorney general for the State of Georgia, for example, has recommended that public educational institutions stop using race in deciding admissions; *Chronicle of Higher Education*, April 19, 1996, p. A40.

on the Scholastic Aptitude Test (SAT) averaged 1,100 or more.[2] The proportion of minority students at these colleges would be extremely low if admissions committees ignored the race or ethnicity of applicants. In fact, African-American applicants enjoy an advantage equivalent to an increase of two-thirds of a point in high school grade point average (GPA)—on a four-point scale—or 400 points on the SAT. However, at the less exclusive four-year colleges that 80 percent of students attend, we could not respect the hypothesis that race plays almost no role in admission decisions.

Part II examines the costs and benefits for minority students and students with low SAT scores of attending an elite college. The most damning charge against racial preference policies is that they harm their intended beneficiaries by enticing unqualified students to colleges where they cannot do the work. The HSB data do not support this claim. For the class of 1982, attending a more selective college is associated with higher graduation rates and higher earnings for both minority and nonminority students. Since one cannot control all the initial differences between students admitted to different kinds of colleges, one cannot be sure that the higher graduation rates and higher pay of those attending more selective institutions are pure "value added." What looks like an effect of attending an elite college may really be an effect of unmeasured preexisting differences in academic or earning potential. However, there is no evidence that the benefits associated with attending an elite school are any lower for black and Hispanic students than for white non-Hispanic students.

Finally, Part III explores what would happen if colleges used class-based preferences instead of race-based preferences. Unless elite colleges dramatically reduce their reliance on high school grades and standardized test scores, class-based preferences cannot do much to cushion the impact of the elimination of race-based preferences. Although blacks and Hispanics would benefit disproportionately from policies favoring low-income applicants, minorities constitute only a small fraction of all high-scoring disadvantaged youth. As a result, substituting class-based for race-based preferences would not suffice to maintain racial diversity at academically selective colleges. Most academically selective colleges probably cannot have both race-blind admissions and racial diversity on campus.

---

[2] Note that since 1995, the SAT has been known as the Scholastic Assessment Test; see Christopher Jencks, *Racial Bias in Testing*, *in* THE BLACK-WHITE TEST SCORE GAP 55 (Christopher Jencks & Meredith Phillips eds., 1998).

I. THE NATURE AND EXTENT OF AFFIRMATIVE ACTION IN HIGHER EDUCATION

Black and white parents have on average different amounts of education and income, and their children often attend different high schools. On the average, black and white college applicants also have different high school grades and scores on standardized tests. Without direct knowledge of the weight that admissions committees attach to each of these characteristics, it is a difficult to know how important race, per se, is to committee decisions.

Richard Herrnstein and Charles Murray use differences in the average SAT scores of black and white students as evidence that elite colleges favor black applicants. Table 12-1 shows that these differences were quite large, ranging from 288 points at the University of California, Berkeley, in 1988 to 95 points at Harvard in the early 1990s. On the basis of these data, Herrnstein and Murray conclude that "the edge given to minority applicants to college and graduate school is not a nod in their favor in the case of a close call, but an extremely large advantage that puts black and Latino candidates in a separate admissions competition."[3]

But table 12-1 might well be misleading for two reasons.[4] First, it is known there are large differences between the mean SAT scores in the population of black and white high school graduates. It is also known that factors other than SAT scores, such as high school grades, personal references, and sometimes even luck, can affect admission decisions. This means that even if admissions committees were color blind, any racial differences in the mean SAT scores of applicants would persist in attenuated form among those admitted. To see why, suppose that a college admitted students either if they had an SAT score above 1,100 or if their last name began with a vowel. Such a process is race blind. But the differences in SAT scores in the population at large will tend to be reflected among the students admitted because those admitted on the basis of their last names will have test scores similar to the scores of the population as a whole (assuming that SAT scores are only weakly related to whether the last name begins with a vowel).

Second, even if students were admitted solely on the basis of SAT score, one would expect some racial difference in their mean scores, because the distribution of SAT scores above the admission threshold would be different for blacks and whites. The College Entrance Examination Board reports that blacks in the high school class of 1982 represented 2 percent of those scoring over 500 on the mathematics SAT, 1 percent of those scoring over 600, and 0.6 percent

---

[3] Herrnstein and Murray (1994, p. 447).

[4] For a more detailed discussion, see Dickens, Kane, and Schultze (1998).

of those scoring over 700.[5] Blacks are thus increasingly underrepresented at higher levels of performance. It follows that if a college admitted all students who scored above 500, blacks would be disproportionately likely to have scores in the 500 to 600 range, while whites would be overrepresented at higher levels. As a result, even a color-blind college that admitted only students with mathematics scores above 500 would find that on average its black students scored lower than its white students.

Table 12-1. *Racial and Ethnic Differences in SAT Scores, SelectedFour-Year Colleges, 1998 and Early 1990s*

Test score points

	Difference relative to whites	
Institution	*Blacks*	*Asians*
Rice	-271	70
University of California, Berkeley	-288	2
University of Virginia	-246	-22
Dartmouth	-218	49
Oberlin	-206	-57
University of Rochester	-219	-37
Wesleyan	-219	27
University of Chicago	-207	-28
Stanford	-171	58
Columbia	-182	42
Duke	-184	38
Williams	-181	36
Northwestern	-180	35
Wellesley	-175	34
Swarthmore	-200	-6
Amherst	-178	18
Princeton	-150	40
Brown	-150	40
Cornell	-162	21
University of Pennsylvania	-150	23
Harvard	-95	65
Georgetown	-147	3
Massachusetts Institute of Technology	-122	-5

Source: Herrnstein and Murray (1994, p. 452). Data for the University of Virginia and the University of California, Berkeley, are for 1988; others are from early 1990s.

Using data from the high school class of 1982, I estimate that if a college relied entirely on high school GPA to rank students and admitted only those in

[5] Ramist and Arbeiter (1984).

the top third of their class, its white freshmen would score 180 points higher on combined verbal and mathematics SAT scores than its black freshmen.[6] Even if the college based admissions solely on SAT scores and admitted the top third of high school students, whites would have mean SAT scores 34 points higher than blacks. Therefore, an elite college could satisfy Herrnstein and Murray's standard only by discriminating *against* blacks and Hispanics because race-blind rules would continue to produce differences in SAT scores by race.[7]

To learn about the actual effect of affirmative action in college admissions, one must look at which applicants specific colleges admit and reject. To answer this question, I use data from the High School and Beyond survey, a longitudinal survey of the high school class of 1982. The base year sample was drawn from 1,015 public and private high schools in the United States. Students were first surveyed in 1980, when they were in tenth grade, and followed up in 1982, 1984, 1986, and 1992. For students who attended a four-year college, I add data on that college's undergraduate enrollment, the mean SAT score of its entering freshmen, whether the college was historically black, and the percent of the student body that was black and Hispanic.[8]

---

[6] To simulate college admission decisions based on high school GPA alone, I sort students by grade point average in academic subjects at high school, and for the top third, calculate mean SAT scores by race and ethnicity. To simulate admissions based solely on SAT scores, I follow the same procedure, after initially sorting students by SAT score.

[7] Although this Article is concerned with inferring racial preference in college admissions, the same problems arise when trying to infer discrimination in hiring, for example. In that context the relevant question is: "Among those with a given level of academic preparation, did blacks and whites end up at different levels?" Observers without access to a representative sample of the population may tend to base their inferences on the sample at hand—on the job, in their school, in their neighborhood—asking whether blacks and whites have different mean qualifications. Surveys suggest that whites think there is strong affirmative action in the labor market. Yet, William Johnson and Derek Neal show that black males have lower annual earnings than similarly qualified whites. See William R. Johnson & Derek Neal, *Basic Skills and the Black-White Earnings Gap*, *in* THE BLACK-WHITE TEST SCORE GAP, *supra* note 2, at 480. The popular impression may rest on the same mistaken reasoning as Herrnstein and Murray's argument. For a discussion of the problems of inferring discrimination by studying differences in qualifications among those with similar earnings, see Goldberger (1984).

[8] Mean SAT scores for colleges and universities were obtained from the Higher Education Research Institute (HERI) of the University of California, Los Angeles. HERI gathers these data from college guides, such as Peterson's and Barron's. The SAT scores published in such guides are reported by the schools and are not verified. The data manager for the Peterson's guide reports sending out yearly mailings to 1,950 four-year schools. Schools are asked to indicate what percentage of their admitted students fall within one-hundred-point ranges on the mathematics and verbal sections of the SAT. The means in this Article are calculated using weighted averages of the mid-points of these ranges. Each school's form also carries that school's responses from the previous year. The school has the

The 1984 followup asked respondents to list their top two choices among the colleges to which they had applied, and to say whether they had been accepted by them.[9] The HSB survey includes students' scores on tests administered during their sophomore and senior years in high school, high school grades and activities, family income, and parental education.[10] Holding these characteristics constant, I estimate the effect of race and ethnicity on the likelihood of being admitted to various types of colleges.

Table 12-2 shows the difference in the probability of acceptance associated with different characteristics. The first column shows the effect on the predicted acceptance rate of a one unit change in each characteristic when the applicant's other characteristics were at the mean of the applicant pool. Overall, it shows that blacks and Hispanics were 2.1 percent and 2.2 percent, respectively, more likely to be admitted at the schools to which they applied than non-Hispanic whites (hereafter, "whites") with similar credentials.[11] This advantage is roughly as large as the advantage associated with being a member of student government, having a B+ rather than a B average in high school, or scoring 1,130 rather than 1,000 on the SAT.

---

option to indicate that the data are unchanged; approximately 50 percent do so each year.

[9] HSB respondents report higher acceptance rates than do colleges. Nine-tenths (89 percent) of the HSB sample who applied to a four-year college reported that they were accepted; the College Entrance Examination Board (1994), by contrast, reports acceptance rates of 70 percent at public institutions and 60 percent at private institutions. There are at least three possible explanations for the divergence. First, only 39 percent of public colleges and 49 percent of private institutions responded to the College Board survey. If more selective institutions were more likely to respond, the estimated acceptance rate would be biased upward. Second, colleges are probably more likely than students to report an incomplete application as a denial. Colleges have an incentive to overstate selectivity, while students may be reluctant to admit being denied admission. Indeed, there is some evidence in the HSB data that colleges overstate average SAT scores of their students. Third, students were only asked to name their first two choices. A disproportionate share of students may have chosen not to list the most selective schools among the top two, to shield themselves from having to admit that they were not accepted.

[10] For the sample of students without SAT scores on their high school transcripts, I imputed SAT scores by first regressing SAT scores on sophomore and senior HSB test scores for those with SAT scores and then using the regression coefficients on sophomore and senior test scores to impute SATs for those without them.

[11] Students of primarily Asian ethnicity seem to be 4.5 percentage points *less* likely than whites to be admitted.

Table 12-2. *Determinants of Admission to Four-Year College*[a]

		Quintile of college selectivity[b]				
Variable	*All colleges*	*Lowest*	*Second*	*Third*	*Fourth*	*Top*
Race[c]						
Black, non-Hispanic	0.021	–0.001	–0.014	–0.020	0.031	0.103
	(0.010)	(0.014)	(0.016)	(0.027)	(0.011)	(0.028)
Hispanic	0.022	0.010	0.000	–0.021	0.032	0.086
	(0.010)	(0.010)	(0.016)	(0.028)	(0.013)	(0.031)
Other, non-Hispanic	–0.045	. . .	–0.053	–0.046	–0.087	–0.067
	(0.018)		(0.037)	(0.043)	(0.059)	(0.040)
Academic credentials						
High school academic GPA[d]	0.072	0.025	0.020	0.048	0.082	0.151
	(0.007)	(0.008)	(0.009)	(0.015)	(0.012)	(0.023)
SAT score[e]	0.016	0.008	0.015	0.007	0.020	0.025
	(0.003)	(0.003)	(0.004)	(0.006)	(0.004)	(0.009)
High school activities						
Student government	0.019	0.002	0.026	0.009	0.002	0.053
	(0.007)	(0.010)	(0.010)	(0.017)	(0.012)	(0.020)
Athletics	0.011	0.016	0.002	0.016	0.004	0.006
	(0.007)	(0.010)	(0.011)	(0.014)	(0.011)	(0.020)
College selectivity						
Mean college SAT[f]	–0.077	–0.026	–0.035	–0.078	–0.025	–0.165
	(0.005)	(0.013)	(0.026)	(0.079)	(0.039)	(0.018)
Summary statistic						
Sample size	5,888	928	991	1,070	1,097	1,696
Probability of admission for average applicant	0.927	0.978	0.967	0.938	0.957	0.812

Source: Author's calculations based on data from the High School and Beyond survey.

a. Calculated from a probit regression analysis. The effect of being "other, non-Hispanic" is not identified for the lowest quintile, since no such students were denied admission at those schools. Equations include indicators for eight categories of family income, five categories of parental education, and eight categories of high school sample stratum. Standard errors, shown in parentheses, are calculated using a method proposed by Huber (1967) and White (1980), which allows the errors to be correlated among those applying to the same college.

b. Quintile breaks are set in such a way that equal numbers of students enrolled in each quintile.

c. Relative to non-Hispanic whites.

d. Scale is 0(F) to 4 (A).

e. Scale is 4 (400) to 16 (1600).

f. Scale is 4 (400) to 16 (1600).

However, the other five columns show that the admissions process differs substantially at different types of school. To measure selectivity, I rank colleges by their students' mean SAT scores and then divide them into five groups of equal size.[12] At the least selective 60 percent of colleges, being black or

[12] The quintile breaks are set so as to ensure that an equal number of students enrolled in each quintile. Note that the more selective colleges receive a disproportionate share of

Hispanic had little effect on an applicant's chances of admission. This is mainly because these colleges admitted almost all of those who applied. Insofar as these colleges were selective, they seem to have relied largely on high school grades and SAT scores. A high school grade point average of B rather than C raised an applicant's chances of admission to a college in the middle quintile by 5 percent, for example, whereas being black or Hispanic had no statistically identifiable effect.

Racial and ethnic differences in the probability of admission are most pronounced at the most selective colleges. At these colleges, otherwise average applicants were 8 to 10 percent more likely to be admitted if they were black or Hispanic. Such a differential is comparable to the effect of having an A- rather than a B average in high school or a total SAT score of 1,400 rather than 1,000.[13]

Table 12-3 investigates whether race affects the weight that elite colleges put on an applicant's other characteristics. Colleges seem to put less weight on high school GPA when evaluating minority applicants. Other characteristics, including SAT scores, evidently have about the same impact on black and white students' chances of admission.

Tables 12-2 and 12-3 describe racial and ethnic differences in the likelihood of admission, after controlling for the student characteristics reported in the HSB survey. Elite colleges also ask applicants to provide other types of information, such as letters of recommendation, that are not measured by the HSB survey. If blacks look better than whites on these "unobservables," table 12-2 overstates the extent of racial preference in college admissions. If minority applicants look worse than white applicants on these unobservables, the table understates the degree of racial preference.

---

applicants. The results in table 12-2 assume that within each quintile, the cutoffs used by more selective schools are a linear function of the college's mean SAT score. Appendix table 12A-1 reports similar results when college fixed effects are included.

[13] The High School and Beyond survey retrieved SAT scores from high school records, when such scores were available. For the remaining cases, I estimate SAT scores from the HSB test battery, using an ordinary least squares equation estimated for students who had both SAT and HSB scores.

Table 12-3. *Racial Preference in Admissions and Characteristics of Students and Colleges, Four-Year Colleges in Top Quintile of Selectivity*[a]

	Difference in predicted probability, evaluated at sample mean			
Variable	*(1)*	*(2)*	*(3)*[b]	*(4)*[c]
Black, non-Hispanic	0.145	0.115	0.073	0.101
	(0.085)	(0.028)	(0.038)	(0.028)
Hispanic	0.139	0.096	0.055	0.121
	(0.090)	(0.030)	(0.043)	(0.032)
Minority*own SAT score	0.012	. . .	. . .	. . .
	(0.018)			
Minority*high school GPA	–0.081	. . .	. . .	. . .
	(0.039)			
Minority*high school student government	0.040	. . .	. . .	. . .
	(0.047)			
Minority*high school athletics	0.052	. . .	. . .	. . .
	(0.042)			
Minority*low income	. . .	–0.098	. . .	. . .
		(0.074)		
Minority*private college	. . .	. . .	0.064	. . .
			(0.041)	
Black, non-Hispanic southern state[d]	. . .	. . .	. . .	0.105
				(0.061)
Black, non-Hispanic Hispanic state[e]	. . .	. . .	. . .	–0.009
				(0.155)
Hispanic, southern state[d]	. . .	. . .	. . .	–0.040
				(0.098)
Hispanic, Hispanic state[e]	. . .	. . .	. . .	–0.078
				(0.080)

Source: Author's calculations based on data from sources for table 12-2.

a. Calculated from a probit regression analysis. Equations include indicators for participation in high school athletics, high school student government, and other high school activities; the student's own SAT score; the college's mean SAT score; the student's high school GPA in academic subjects; eight categories of family income; five categories of parental education; and eight categories of high school sample stratum. The specification in column 4 also includes an indicator for Hispanic states and southern states. Standard errors, shown in parentheses, are calculated using the method proposed by Huber (1967) and White (1980); see table 12-2, note a.

b. Includes an indicator for private colleges.

c. Includes indicators for colleges in "southern" and "Hispanic" states; see notes d and e below.

d. Southern states include Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Kentucky, Tennessee, Mississippi, and Alabama.

e. Hispanic states include California, New Mexico, Arizona.

One way to examine whether the limited range of data available from the HSB questionnaire biases my estimates of racial preference is to focus on

students who applied to more than one college and compare their chances of admission at more and less selective institutions. This comparison effectively controls both observed and unobserved characteristics of students. One can then ask whether the chance of admission falls more for whites than for blacks as the selectivity of the colleges to which they apply increases. Table 12-4 shows that applying to a college with a mean SAT score 100 points higher reduces the average applicant's probability of admission by 28 percent.[14] For black and Hispanic applicants, this trade-off seems to be somewhat less pronounced: a 100 point increase in a college's mean SAT score reduces the probability of admission by only 21.6 percent (0.281 - 0.065). Although this black-white difference is on the margin of statistical significance, it is consistent with the earlier and more statistically robust finding that elite colleges put more weight on race in their admissions decisions.[15]

Table 12-4. *Racial Difference in the Probability of Being Admitted to a More Selective Four-Year College*[a]

Effect on probability of admission (admitted to first choice – admitted to second choice)	*Change in probability of admission*
100 point difference in colleges' mean SAT	-0.281
(mean SAT of 1st choice – mean SAT of 2nd choice)/100	(0.065)
100 point difference in colleges' SAT*Black, Hispanic	0.065
	(0.049)

Source: Author's calculations based on data from sources for table 12-2.

a. Calculated from a probit regression analysis. Standard errors are in parentheses. The sample is limited to students who applied to two four-year colleges and were accepted at only one. Sample size is 467.

II. THE BENEFITS OF ATTENDING A SELECTIVE COLLEGE

One of the more provocative charges leveled against racial preference in college admissions is that the policy actually hurts the intended beneficiaries, by enticing minority youth to enter colleges for which they are underprepared and in which they are more likely to fail because of the competition from other students. Indeed, some have claimed that reverse discrimination explains the high dropout rates and low grade point averages of minority undergraduates. This section examines the payoff to attending a selective college for both minority and nonminority students.

[14] The probit specification used to generate table 12-4 can be estimated only for the sample of students who applied to two four-year colleges and were accepted at one, but not both.

[15] Because the sample is limited to those who applied to two colleges and were accepted at only one of these, the racial differential in likelihood of admission at higher quality schools has a large standard error, with a two-sided p value of 0.19.

Table 12-5. *Students' College Grade Point Average and College Selectivity*[a]

Variable	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
Black or Hispanic	–0.315	–0.129	–0.132	0.025	0.015	–0.095	0.123
	(0.034)	(0.030)	(0.030)	(0.188)	(0.240)	(0.307)	(0.332)
College selectivity[b]	. . .	. . .	–0.027	–0.020	–0.020	. . .	. . .
			(0.012)	(0.014)	(0.014)		
Selectivity*minority	. . .	. . .	. . .	–0.016	–0.014	–0.005	–0.027
				(0.019)	(0.024)	(0.030)	(0.033)
Historically black institution*minority	. . .	. . .	. . .	. . .	0.016	. . .	. . .
					(0.100)		
Selectivity*individual SAT score[c]	. . .	. . .	. . .	. . .	. . .	. . .	–0.015
							(0.007)
College fixed effects	No	No	No	No	No	Yes	Yes
Controls for family background, high school grades, SAT	No	Yes	Yes	Yes	Yes	Yes	Yes

Source: Author's calculations based on data from sources for table 12-2.

a. All specifications include indicators for high school sample stratum. Family background and academic controls include five dummies for parental education, eight dummies for family income, gender, student's SAT score, and high school grade point average. Sample size is 2,912. Standard errors, shown in parentheses, are calculated using the method proposed by Huber (1967) and White (1980); see table 12-2, note a.

b. College's mean total SAT score scale is 4 (400) to 16 (1600).

c. Scale is 4 (400) to 16 (1600).

A student's college performance is likely to depend on at least three distinct factors: prior educational preparation (as measured by a standardized test score), the quality of the college (proxied by the mean standardized test score of the other students attending that college), and the match between the student's preparation and the preparation of other students at the same college (as measured by the difference between the student's standardized test score and the mean score of other students at the college). Observers are not always careful to distinguish these effects. For instance, in an article in the *Public Interest*, John Bunzel catalogued the poor grades and high dropout rates of black students admitted under an affirmative action program at the University of California, Berkeley.[16] His discussion implies that these high dropout rates were the result of the difference between the SAT scores of black students and those of most other students at Berkeley.[17] But given their lower test scores and high school grades, it is perfectly possible that these black students would have dropped out in large numbers no matter which college they attended. In order to learn about the net effect of attending a more selective school, one must compare graduation rates for academically similar students at different schools.

Table 12-5 shows the determinants of the college grade point averages of students in the HSB survey. In all of the estimates reported, students' high school records and family backgrounds are held constant.[18] Column 1 shows that without adjustment for SAT scores or high school grades, the college GPAs of black and Hispanic students are roughly 0.3 points lower than those of white and Asian students—equivalent to a B rather than B+ average, for example. This is consistent with the evidence presented by Bunzel. Column 2 estimates the college GPA gap between blacks and whites with the same SAT score, high school GPA, family income, and parental education. I find, as do many other authors, that blacks and Hispanics have lower college GPAs than whites with apparently similar academic credentials and family background.[19] This suggests

---

[16] Bunzel (1988).

[17] Herrnstein and Murray (1994) draw a similar conclusion.

[18] The sample is limited to those who reported attending a four-year college. The GPA results are based on grades from the first four-year college attended. For the B.A. completion and earnings results, I analyze the characteristics of the first four-year college attended. To limit the influence of outliers, I exclude those with annual earnings of less than $1,000 or more than $100,000 from the earnings equation.

[19] See Cleary (1968); Crouse and Trusheim (1988); Nettles, Theony, and Gosman (1968); Ramist, Lewis, and McCamley-Jenkins (1994); Frederick E. Vars & William G. Bowen, *Scholastic Aptitude Test Scores, Race, and Academic Performance in Selective Colleges and Universities*, *in* THE BLACK-WHITE TEST SCORE GAP, *supra* note 2, at 457. Vars and Bowen report that the black-white gap in college GPAs is widest among students with the highest SAT scores. When I test for evidence of a racial difference in the relationship between SAT scores and college GPA, I cannot reject the hypothesis that the relationship is

that Bunzel would have found that black and Hispanic students "underperformed" relative to whites even if Berkeley had exercised a race blind admissions policy in the 1980s.

The third column of table 12-5 shows that when one holds applicants' characteristics constant, those who attended more selective colleges earned lower grades—but the effect of selectivity is rather small. All else equal, a 100 point increase in a college's mean SAT score is associated with a 0.027 point drop in a student's GPA. Since the mean SAT is only 200 points higher in the top quintile of colleges than in the bottom quintile, attending a more selective college has a small effect on a student's GPA.

Table 12-6 performs an equivalent exercise to show the effect of college selectivity on college graduation rates, rather than grades. Attending a more selective college is associated with a 3 percent increase in the likelihood of graduating. In other words, the net effect of attending a more selective institution on completion rates for students with similar test scores is positive, not negative. Since studying at a selective college surely puts students at some competitive disadvantage relative to their classmates, this finding suggests that such colleges have offsetting advantages. Perhaps better prepared classmates or better teachers make attending these colleges more interesting. Selective colleges may also establish social norms that favor staying in school.

Table 12-7 shows that holding an entering student's measured characteristics constant, a 100 point increase in a college's mean SAT score is associated with a 0.056 increase in the log of earnings in 1991, nine years after high school graduation. That is equivalent to a 5.8 percent increase in actual earnings.[20] There is also some evidence that this payoff may have risen over time.[21]

---

the same for blacks and whites. I suspect that my results differ from Vars and Bowen's because our data come from different samples. In contrast to their sample of students from highly selective colleges, the HSB data probably do not have enough power to distinguish among students at the very top of the SAT distribution.

[20] Since completion of the B.A. is not included in the earnings equation, the estimated relationship between college selectivity and earnings includes the net effect of college quality on degree completion.

[21] Brewer, Eide, and Ehrenberg (1996). The finding that college selectivity is related to earnings is also consistent with Daniel, Black, and Smith (1995), James and others (1989), and Wales (1973).

Table 12-6. *Completion of B.A. by 1992 and College Selectivity*[a]

Variable	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
Black or Hispanic	–0.160	–0.033	–0.030	0.269	0.006	0.030	0.173
	(0.020)	(0.020)	(0.020)	(0.114)	(0.240)	(0.186)	(0.200)
College selectivity[b]	. . .	. . .	0.031	0.044	0.045	. . .	. . .
			(0.007)	(0.008)	(0.008)		
Selectivity*minority	. . .	. . .	. . .	–0.030	–0.006	–0.009	–0.023
				(0.011)	(0.013)	(0.018)	(0.020)
Historically black institution*minority	. . .	. . .	. . .	. . .	0.172	. . .	. . .
					(0.053)		
Selectivity*individual SAT score[c]	. . .	. . .	. . .	. . .	. . .	. . .	–0.010
							(0.004)
College fixed effects	No	No	No	No	No	Yes	Yes
Controls for family background, high school grades, SAT	No	Yes	Yes	Yes	Yes	Yes	Yes

Source: Author's calculations based on data from sources for table 12-2.

a. All specifications include indicators for high school sample stratum. Family background and academic controls include five dummies for parental education, eight dummies for family income, gender, student's SAT score, and high school grade point average. Sample size is 3,671. Standard errors, shown in parentheses, are calculated using the method proposed by Huber (1967) and White (1980); see table 12-2, note a.

b. College's mean total SAT score scale is 4 (400) to 16 (1600).

c. Scale is 4 (400) to 16 (1600).

From their analysis of data on the high school class of 1972, Linda Loury and David Garman conclude that greater college selectivity is associated with higher graduation rates for whites, but lower rates for blacks.[22] In table 12-6, column 4 shows, consistent with Loury and Garman, that the relationship between college selectivity and completion of the B.A. is significantly weaker for minority youth than for whites and Asians, although it is not negative. Column 5 shows why this is the case. College selectivity has less impact on blacks in this context because many black undergraduates attend historically black institutions, which have low mean SAT scores but high graduation rates. These institutions have traditionally generated a disproportionate share of black college graduates in the United States. For the 1980s, the HSB shows that blacks who attended historically black institutions still had completion rates 17.2 percent higher than apparently similar minority students in historically white schools. After taking this fact into account, one finds that among students in historically white institutions, selectivity has about the same effect on the graduation rates of minority and nonminority students. Table 12-7 shows that college selectivity is positively associated with earnings and that the payoff is similar for blacks and whites. However, although attending an HBI was positively related to B.A. completion, there is no statistically significant relationship with earnings.[23]

---

[22] Loury and Garman (1995).

[23] For insightful discussions of the economic importance of historically black institutions in the careers of their graduates, see Constantine (1995); Ehrenberg and Rothstein (1994). The statistically insignificant earnings differential associated with attending a historically black institution is consistent with the finding reported by Ehrenberg and Rothstein (1994), who use the same survey as Loury and Garman (1995). Constantine (1995) also finds a small earnings differential for attending a historically black institution using ordinary least squares, but she reports a positive and significant earnings payoff to attending such an institution when she attempts to control for differences in students' unobserved characteristics. This points to another important difference between these results and those of Loury and Garman: Loury and Garman's estimation strategy implicitly assumes that B.A. completion has the same impact on earnings regardless of the college attended. Since they find a weaker relationship between college selectivity and completion rates for black and Hispanic youth, they necessarily find a weaker relationship between college selectivity and earnings for minority youth. However, because the earnings results reported in table 12-7 are not conditional on degree completion, the coefficient of the mean SAT score implicitly includes any effects of college quality that operate through completion rates. If Loury and Garman had estimated only the gross relationship between college selectivity and earnings for blacks and whites, they might well have found it the same for blacks and Hispanics as for others—even without considering the effects of attending a historically black institution.

Table 12-7. *Students' Log Earnings in 1991 and College Selectivity*[a]

Variable	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
Black or Hispanic	−0.086	−0.013	−0.006	−0.094	−0.179	−0.055	0.208
	(0.026)	(0.026)	(0.025)	(0.188)	(0.223)	(0.308)	(0.332)
College selectivity[b]	. . .	. . .	0.056	0.052	0.052	. . .	. . .
			(0.010)	(0.013)	(0.013)		
Selectivity*minority	. . .	. . .	. . .	0.009	0.017	0.005	−0.021
				(0.019)	(0.022)	(0.030)	(0.033)
Historically black institution*minority	. . .	. . .	. . .	. . .	0.056	. . .	. . .
					(0.087)		
Selectivity*individual SAT score[c]	. . .	. . .	. . .	. . .	. . .	. . .	−0.019
							(0.007)
College fixed effects	No	No	No	No	No	Yes	Yes
Controls for family background, high school grades, SAT	No	Yes	Yes	Yes	Yes	Yes	Yes

Source: Author's calculations based on data from sources for table 12-2.

a. All specifications include indicators for high school sample stratum. Family background and academic controls include five dummies for parental education, eight dummies for family income, gender, student's SAT score, and high school grade point average. Sample size is 3,686. Standard errors, shown in parentheses, are calculated using the method proposed by Huber (1967) and White (1980); see table 12-2, note a.

b. College's mean total SAT score scale is 4 (400) to 16 (1600).

c. Scale is 4 (400) to 16 (1600).

In tables 12-5, 12-6, and 12-7, column 6 controls for all differences between colleges, using a fixed effects model. Column 6 therefore estimates the impact of different influences on students who attend the same institution. Using this approach, the relationship between college selectivity, college GPA, completion of the B.A., and earnings never varies significantly by race. Column 7 tests for an interaction between the student's own test score and the mean score at the college that the student attended. The interaction is significantly negative for both graduation rates and earnings. This would suggest that the gains associated with attending a more selective school are higher for those with lower test scores.[24]

As noted above, selective colleges ask applicants for more information than does the HSB survey. This additional information substantially improves the ability of elite colleges to predict college grades.[25] Since most selective colleges also use this information to select students, one must assume that the students that they admit differ from those at other colleges in ways that the HSB does not measure. That makes it difficult to infer the true value added by more selective institutions. All one can say is that the estimates in tables 12-6 and 12-7 probably overstate the benefits of attending a more selective college. But there is no reason to think that this bias is larger for minority students than for other students—in fact, one might expect the bias to be smaller for minority students, since it is primarily the most selective schools that use racial preferences in admissions decisions. In terms of both B.A. completion and earnings, the racial difference in the payoff to attending a more selective college is small and insignificant. To the extent that more selective institutions offer benefits to their students, these payoffs seem to be as large for black and Hispanic youth as for white youth.

III. CLASS-BASED AFFIRMATIVE ACTION

As political support for the use of racial and ethnic preferences in college admissions has eroded, some have argued that colleges should replace racial preferences with a system of class-based preferences.[26] Indeed Michael Williams, who opposed race-based scholarships as an official in George Bush's administration, recently suggested that "the end of racial preferences is here, but . . . with some ingenuity and creativity, America's campuses can continue

---

[24] None of the results in tables 12-5 to 12-7 are sensitive to the linear specifications used. I obtain similar results by using a wide range of polynomials for a student's own SAT, the college's mean SAT, and the difference between the two.

[25] See Vars & Bowen, *supra* note 19.

[26] For a summary of the case for class-based preferences, see Kahlenberg (1996).

to represent the wide variety that is America."[27]

As table 12-8 shows, class is a very poor substitute for race for selective colleges seeking racial diversity. The problem is simply one of demographics. To illustrate the point, I tabulate a representative sample of youth from the high school class of 1992. The top panel of table 12-8 presents the cross-tabulation of race by family income for the full sample of those graduating in 1992; the bottom panel presents a similar cross-tabulation for the subsample of youth with combined math and reading test scores in the top 10 percent of the class. (Row proportions are reported in parentheses and column proportions are reported in square brackets.)

As reported in the top panel of table 12-8, blacks and Hispanics were roughly three times as likely as white and other non-Hispanic students to come from families with incomes at or below $20,000 (51.2 percent of blacks and Hispanics as opposed to 17.5 percent of whites and others). Such facts are the source of the intuition that income-based preference in college admissions would disproportionately benefit black and Hispanic youth since they are more likely to be from low-income backgrounds than whites and other non-Hispanics. However, as reported in the row percentages in the top panel of table 12-8, less than half (47 percent) of those who were low-income were black or Hispanic. The simple reason for the paradox is that blacks and Hispanics are a minority of the population and, as a result, are a minority of most subgroups of the population, including low-income youth.

However, as reported in the bottom panel of table 12-8, this paradox is even more telling among the youth with test scores in the top 10 percent of the class of 1992. Again, black and Hispanic youth are three times as likely to be low-income: 17.2 percent of blacks and Hispanics and 6.1 percent of white and other non-Hispanic students with high scores came from families with incomes at or below $20,000. However, among the high-scoring youth who were also low-income, only 17.3 percent (roughly one out of six) were black or Hispanic.

---

[27] Michael L. Williams, "Racial Diversity without Racial Preferences," *Chronicle of Higher Education*, November 15, 1996, p. A64.

Table 12-8. *The Demographics of Race and Income, High School Class of 1992*

Among Those Graduating from High School in 1992
(Row proportion)
[Column proportion]

	Blacks and Hispanics	Whites and other non-Hispanics	Row total
Income > $20,000	266,700	1,493,100	1,759,800
	(0.152)	(0.848)	(1.000)
	[0.487]	[0.825]	[0.747]
Income < $20,000	280,100	316,200	596,300
	(0.470)	(0.530)	(1.000)
	[0.512]	[0.175]	[0.253]
Column total	546,800	1,809,300	2,356,100
	(0.232)	(0.768)	
	[1.000]	[1.000]	

Among Those Graduating from High School in 1992
Who Had Combined Reading and Math Test Scores in the Top Tenth of the Class
(Row proportion)
[Column proportion]

	Blacks and Hispanics	Whites and other non-Hispanics	Row total
Income > $20,000	11,800	182,000	193,800
	(0.061)	(0.939)	(1.000)
	[0.828]	[0.939]	[0.932]
Income < $20,000	2,400	11,700	14,200
	(0.173)	(0.827)	(1.000)
	[0.172]	[0.061]	[0.068]
Column total	14,200	193,800	208,000
	(0.068)	(0.932)	
	[1.000]	[1.000]	

Source: Author's calculations based on National Education Longitudinal Study (NELS) data.

In other words, if a selective college with an application pool of students with test scores in the top ten percent granted a preference to students with family incomes below $20,000, only one out of six would be black or Hispanic. The reason is not that high-scoring black or Hispanic youth have higher incomes than white and other non-Hispanic youth. Clearly, they do not. As in the full sample of high school graduates in 1992, black or Hispanic youth with test scores in the top 10 percent were three times as likely to be low income than white and other non-Hispanic youth. Rather, the source of the apparent

paradox is that blacks and Hispanics are a minority of the population, and a very small minority of students with test scores in the top ten percent (6.8 percent) and as a result, represent a minority of most subgroups of the population, including low-income youth.

There may be other characteristics that are more highly correlated with race than income alone, such as family wealth or neighborhood poverty rates, that a college might use to construct a "race-blind" measure for promoting racial diversity. However, since blacks and Hispanics are only 6.8 percent of the highest-scoring youth, it would be difficult to find a preference that would yield even a majority of black or Hispanic youth. For instance, even if high-scoring black or Hispanic youth were thirteen times more likely to meet some combination of wealth, neighborhood, and family income criteria than other youth, they would still represent less than half of the high-scoring youth meeting the criteria.[28]

Table 12-8 also illustrates another implication of the demographics of race, income, and test scores. Although high-scoring black or Hispanic youth are three times as likely to have incomes less than $20,000 than whites and other non-Hispanic youth, only 17.2 percent of high-scoring black or Hispanic youth come from such low-income families (as compared with 51.2 percent of all black or Hispanic youth). Because test scores are so strongly related to family income, a small share of the high-scoring minority youth—those most likely to benefit from a race-based criterion at selective schools—are actually low-income.

Highly selective colleges have four options. First, they can continue current policies. That is, they can continue to admit students primarily on the basis of test scores and high school grades, but boost black and Hispanic enrollments with some form of racial preference near the academic margin.

Second, they can replace current racial preferences with much larger scale class-based programs, at the same time becoming less academically selective.

---

[28] This is a simple application of Bayes' Rule. For example, suppose that $P(D|BH)$ and $P(D|O)$ are the proportions of black and Hispanic and other youth that meet some definition of "disadvantaged" respectively. Suppose further that $P(BH)$ is the proportion of the population in question that is black or Hispanic. Bayes' Rule implies that the proportion of disadvantaged youth that are black or Hispanic $[P(BH|D)]$ can be expressed as

$$P(BH)D = \frac{P(D\backslash BH)P(BH)}{P(D\backslash BH)P(BH) + P(D\backslash O)(1 - P(BH))} = \frac{kP(BH)}{kP(BH) = (1 - P(BH))}$$

(where k is the relative likelihood that blacks and Hispanic youth meet the definition of disadvantage, $P(D|BH)/P(D|O)$). Within a pool of youth that is only 6.8 percent black or Hispanic $[P(BH) = .068]$, it can be shown that $P(BH|D)$ is greater than 0.5 only if k is greater than 13.7.

This would mean deemphasizing high school grades and especially SAT scores, which put minority students at a substantial disadvantage, and emphasizing nonacademic selection standards that have less adverse impact on minority applicants.

Third, they can remain as academically selective as at present, replace race-based preferences with class-based preferences, and allow the number of black and Hispanic youth on campus to drop sharply. And fourth, they can abandon racial preferences and allow minority enrollment to drop even more than it would if they adopted class-based preferences instead.

In short, there is an inescapable trade-off between race blindness and racial diversity. Class-based preferences do not offer a way out of the quandary.

IV. CONCLUSION

Although twenty years have passed since the Supreme Court decision in the *Bakke* case affirmed the use of race as one factor in college admissions, many of the most basic questions regarding the magnitude of racial preference in college admissions have remained unanswered. In this Article, I have attempted to provide some answers using data from the high school graduating class of 1982. The evidence suggests that use of race in college admissions appears to be limited to the most selective 20 percent of four-year institutions. Yet at these institutions, race weighs heavily in admission decisions: being black or Hispanic has approximately the same effect on one's chances of admission as two-thirds of a grade point performance in high school or roughly 400 points on the SAT test.

Two claims are often made in the debate over racial preferences that, if true, would greatly simplify the impending decisions regarding the fate of racial preference policies. The first is that racial preferences actually harm the intended beneficiaries, leading to lower college completion rates by black and Hispanic youth, putting them at a competitive disadvantage relative to their classmates. If such a claim were true, all racial groups could be made better off by ending affirmative action in college. However, the evidence suggests that the matter is not so simple: even if a student's characteristics are held constant, attendance at a more selective institution is associated with higher earnings and higher college completion rates for minority students as well as white and other non-Hispanic students. College retention rates are lower for black and Hispanic students, apparently because of differences in academic preparation emerging from high school and racial differences in performance among otherwise similar students within most colleges. But to the extent that affirmative action leads minority students to attend more selective colleges than they would otherwise, affirmative action may actually lead to narrower rather than wider gaps in

college retention rates by race, since the net relationship between college selectivity, earnings, and college graduation rates appears to be positive for minority and other students.

The second claim is that colleges could achieve the same extent of racial diversity on campus without using race explicitly by granting preferences in admissions on the basis of other factors such as family income or family wealth. To the extent that society values both race blindness and racial diversity on elite campuses, the prospect of a race-blind rule producing an equivalent degree of racial diversity on campus is an attractive one, since it would seem to achieve the goal of diversity at less cost in terms of an explicit racial preference. However, the evidence suggests that a race-blind route to racial diversity is likely to be hard to find. Because blacks and Hispanics represent such a small share of students with standardized test scores in the top of their class, colleges are likely to have a difficult time finding any subgroup of high-scoring students in which blacks or Hispanics are anything but a small minority. For instance, although high-scoring black or Hispanic youth are more likely to be from low-income backgrounds, they represent only one out of six low-income students with test scores in the top tenth of the class of 1992.

The debate over affirmative action in college admissions will depend on a careful weighing of the value of racial diversity on college campuses against the real costs imposed on the students who are not admitted. In social policy debates, the easy answers—promising social benefits without social costs—usually prove ephemeral. The debate over affirmative action in college admissions is likely to be no different. Although one might make a case for class-based preferences in their own right, they are unlikely to serve as an easy substitute for race-based preferences in generating racial diversity. Likewise, however large the gains in terms of equity or increased access to college for white and other non-Hispanic youth, an end to racial preferences would seem to impose real costs on minority youth. Thus there is no avoiding the difficult trade-offs to be made.

However, the political debate over affirmative action in college admissions is likely to be complicated by the fact that it is difficult for white and other non-Hispanic youth to assess how racial preferences affect their own chances of admission to elite colleges. Handicapped parking policy provides a useful analogy.[29] Suppose that one parking space in front of a popular restaurant is reserved for disabled drivers. Many of the nondisabled drivers who pass by the space while circling the parking lot in search of a place to park may be tempted to think that they would have an easier time finding a space if the space had not been reserved. Although eliminating the space would have only a minuscule

---

[29] I am grateful to George Akerlof for suggesting this analogy.

effect on the average parking search for nondisabled drivers, the cumulative cost perceived by each passing driver is likely to exceed the true cost simply because people have a difficult time thinking about small probability events.

In the same way, many families are likely to misperceive the impact of racial preference in college admissions. Harvard College, for example, accepts roughly 10 out of 100 applicants. Only 1.5 out of the 10 that are admitted (15 percent of students) are black or Hispanic. Even if ending racial preferences excluded all black and Hispanic students (an upper-bound estimate, since many minority applicants would be admitted using color-blind procedures), only 1.5 out of the 90 students who were denied admission would now find a space. Yet, if more than 1.5 out of the 90 students who are now denied think they would be the next person in line when racial preferences are ended, the perceived costs of affirmative action are likely to exceed the actual costs.

Therefore, whatever the true costs of affirmative action in college admissions, the perceived costs are likely to be overstated. The implications of this insight could be used both by supporters and opponents of racial preferences. On the one hand, whatever pedagogical benefits racial diversity produces on campus are being compared with a perceived cost that is likely to be exaggerated. To the extent this is true, the political process is likely to underprovide diversity on campus. On the other hand, whatever benefit is being generated by affirmative action in admissions, the resentment that is produced is likely to be disproportionate. Even if the perceived costs are exaggerated, they represent a real social cost. Therefore, the "handicapped parking" analogy provides an apt description of the quandary college presidents, judges, and voters now face as the future of affirmative action in college admissions is debated.

APPENDIX: DETERMINANTS OF ADMISSION TO A FOUR-YEAR COLLEGE

Table 12A-1 shows the probability of acceptance by a four-year college for applicants with different characteristics, similar to table 12-2, but including college fixed effects.

Table 12A-1. *Determinants of Admission to Four-Year College, College Fixed Effects Included*[a]

	Quintile of college selectivity[b]				
Variable	*Lowest*	*Second*	*Third*	*Fourth*	*Top*
Race[c]					
Black, non-Hispanic	0.004	-0.009	-0.012	0.039	0.168
	(0.013)	(0.028)	(0.045)	(0.015)	(0.022)
Hispanic	-0.021	0.018	0.028	0.023	0.122
	(0.028)	(0.017)	(0.035)	(0.019)	(0.031)
Other, non-Hispanic	. . .	-0.100	0.008	-0.139	-0.022
		(0.099)	(0.055)	(0.093)	(0.044)
Academic credentials					
High school academic GPA[d]	0.054	0.038	0.108	0.104	0.219
	(0.027)	(0.015)	(0.025)	(0.019)	(0.026)
SAT score[e]	0.010	0.029	0.016	0.027	0.049
	(0.006)	(0.008)	(0.009)	(0.006)	(0.009)
High school activities					
Student government	0.011	0.032	0.019	0.004	0.090
	(0.006)	(0.017)	(0.027)	(0.017)	(0.024)
Athletics	0.029	0.006	0.007	-0.008	0.028
	(0.019)	(0.016)	(0.026)	(0.015)	(0.027)
Summary statistic					
Number of college effects estimated	25	37	49	42	105
Sample size	215	380	579	725	1,393

Source: Author's calculations based on data from sources for table 12-2.

a. The effect of being "other, non-Hispanic" is not identified for the lowest quintile, since no such students were denied admission at those schools. Equations include eight categories of family income, five categories of parental education, and eight categories of high school sample stratum. Standard errors, shown in parentheses, are calculated using the method proposed by Huber (1967) and White (1980); see table 12-2, note a.

b. Quintile breaks are set in such a way that equal numbers of students enrolled in each quintile.

c. Relative to non-Hispanic whites.

d. Scale is 0(F) to 4 (A).

e. Scale is 4 (400) to 16 (1600).

REFERENCES

Brewer, Dominic J., Eric Eide, and Ronald Ehrenberg. 1996. "Does It Pay to Attend an Elite Private College?" NBER Working Paper 5613. Cambridge, Mass.: National Bureau of Economic Research.

Bunzel, John. 1988. "Affirmative Action Admissions: How It 'Works' at UC Berkeley." *Public Interest* 93 (Fall):111–29.

Cleary, Anne T. 1968. "Test Bias: Prediction of Grades of Negro and White Students in Integrated Colleges" *Journal of Educational Measurement* 5(Summer):115–24.

Coate, Stephen, and Glenn C. Loury. 1993. "Will Affirmative-Action Policies Eliminate Negative Stereotypes?" *American Economic Review* 83(5):1220–40.

College Entrance Examination Board. 1994. *Summary Statistics: Annual Survey of Colleges, 1992–93 and 1993–94.* New York.

Constantine, Jill. 1995. "The Effect of Attending Historically Black Colleges and Universities on Future Wages of Black Students." *Industrial and Labor Relations Review* 48(3):531–46.

Crouse, James, and Dale Trusheim. 1988. *The Case against the SAT.* University of Chicago Press.

Daniel, Kermit, Dan Black, and Jeffrey Smith. 1995. "College Quality and the Wages of Young Men." University of Pennsylvania, June.

Dickens, William T., Thomas J. Kane, and Charles Schultze. Forthcoming. *Does the Bell Curve Ring True?* Brookings.

Ehrenberg, Ronald, and Donna Rothstein. 1994. "Do Historically Black Institutions of Higher Education Confer Unique Advantages on Black Students?" In Ronald Ehrenberg, ed., *Choices and Consequences: Contemporary Policy Issues in Education.* Ithaca, N.Y.: ILR Press.

Goldberger, Arthur S. 1984. "Reverse Regression and Salary Discrimination." *Journal of Human Resources* 19(3): 293–318.

Herrnstein, Richard, and Charles Murray. 1994. *The Bell Curve: Intelligence and Class Structure in American Life.* Free Press.

Huber, P. J. 1967. "The Behavior of Maximum Likelihood Estimates under Non-Standard Conditions." *Proceedings of the Fifth Berkeley Symposium on Mathematical Statistics and Probability,* vol. 1. University of California Press, pp. 221–33.

James, Estelle, and others. 1989. "College Quality and Future Earnings: Where Should You Send Your Child to College?" *American Economic Review* 79(2): 247–52.

Kahlenberg, Richard D. 1996. *The Remedy: Class, Race, and Affirmative Action.* Basic Books.

Loury, Linda Datcher, and David Garman. 1995. "College Selectivity and Earnings." *Journal of Labor Economics* 13(2):289–308.

Nettles, Michael T., A. Robert Theony, and Erica Gosman. 1986. "Comparative and Predictive Analyses of Black and White Students' College Achievement and Experiences." *Journal of Higher Education* 57(May–June):289–318.

Ramist, Leonard, and Solomon Arbeiter. 1984. *Profiles, College-Bound Seniors, 1982*. New York: College Entrance Examination Board.

Ramist, Leonard, Charles Lewis, and Laura McCamley-Jenkins. 1994. *Student Group Differences in Predicting College Grades: Sex, Language and Ethnic Groups*. New York: College Entrance Examination Board.

Wales, Terence. 1973. "The Effect of College Quality on Earnings: Results from the NBER-Thorndike Data." *Journal of Human Resources* 8:306–17.

White, H. 1980. "A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity." *Econometrica* 48(4):817–38.